A FOLLOW-UP STUDY OF THE GRADUATES OF THE ELECTROMECHANICAL TECHNOLOGY CURRICULUM AT OKLAHOMA STATE UNIVERSITY

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CHAPTER I

INTRODUCTION

The unprecedented technological growth experienced by the United States since the end of World War II has been paralleled by an increase in the complexity and diversity of technical occupations. Today's new and emerging technical fields utilize knowledge from two or more disciplines, so that the technician is often required to possess combinations of skills that have previously been considered highly specialized.

Two of the fields in which the technician is often required by industry to possess a high degree of proficiency in both fields are electrical technology and mechanical technology. The most immediate need for this type "hybrid" technician has been in the industries with highly automated and mechanized processes in which combinations of mechanical, electrical, and electronic units work together to perform a function, such as automated manufacturing.

Technical educators in their efforts to expand and modernize technician training programs, have developed educational programs in electromechanical technology. These new programs are designed to provide preparatory training for the technician working in activities where technical concepts in both electrical and mechanical principles are needed. The electromechanical technician is a semiprofessional

individual who has a science based knowledge of electrical and mechanical principles.

The research staff of Oklahoma State University's School of Occupational and Adult Education developed a program in electromechanical technology and initiated a two year pilot training project to test the feasibility of the developed curriculum under classroom conditions. In September, 1968, the first electromechanical technology class consisting of 27 members was enrolled, 17 of whom graduated in 1970. The second and final class of 28 members enrolled in September, 1969. Eighteen members of this class graduated in 1971.

Purpose of the Study

The determination of the adequacy and effectiveness of a technician training program depends upon several factors. Some of these factors include the student population, the curricula, and the physical facilities of the institution. One often overlooked factor of evaluation is the graduate of the technician training program. The graduate is perhaps the most important factor in determining the adequacy and effectiveness of any technician training program.

The objectives of this study were to investigate the occupational and educational patterns, job functions, and individual attitudes of the graduates of the two-year electromechanical technology pilot project at the Oklahoma State University. The results of this study will facilitate:

1. The evaluation of existing electromechanical technology programs.

2. The future development of electromechanical technology programs.

3. Research studies of emerging occupational fields which require new combinations of technical skills.

4. The placement and employment of future electromechanical technology graduates.

5. The establishment of electromechanical technology programs by other institutions.

6. The recruitment of new electromechanical technology students.

Questions Investigated

The following questions were investigated in this study.

1. What were the particular occupational and educational patterns of the graduates of the two year pilot Electromechanical Technology Program at Oklahoma State University?

2. What particular skill areas did the EMT graduates working full-time in an electromechanical occupation consider most important for the performance of their jobs?

3. What amount of the skills used in the performance of the EMT graduates' jobs working in an EMT or related occupations were learned at Oklahoma State University?

4. Where did the graduates working in an EMT or related occupation learn most about the skills used in the performance of their jobs?

5. To what extent did the EMT graduates working in an EMT or related occupation receive supervision in the skills necessary to the performance of their jobs?

6. To what extent did the EMT graduates working in an EMT or related occupation supervise others in the skills used in the performance of their jobs?

7. In what skill areas did the EMT graduates working in an EMT or related occupation feel they need more training?

8. What were the stated reasons of the EMT graduates continuing in school for continuing their educations?

9. In what particular fields of study were the EMT graduates continuing their educations?

10. What did the EMT graduates continuing in school plan to do upon graduating?

Definition of Terms

Clerical Skills for purposes of this study refer to skills used in record keeping, making out reports, and other types of routine paper work.

Communication Skills for purposes of this study refers to the skills of speaking, writing, and drafting.

Electromechanical Technology consists of the selection and integration of specialized classroom and laboratory learning experiences in both the mechanical and electrical fields. Instruction is planned to provide preparation for responsibilities concerned with the design, development, testing and service of electromechanical devices and systems such as automatic control systems and servo-mechanisms, including vending machines, missile controls, tape-control machines, and auxiliary computer equipment.

The program of instruction is designed to develop understanding, knowledge, and skills which will provide the capacity to perform effectively in such areas as: feasibility testing of engineering concepts; systems analysis including design, section, and testing; application of engineering data; and the preparation of written reports and test results in support of mechanical and electrical engineers.[1]

Electromechanical Technology Graduates for purposes of this study refers to those persons who completed the prescribed course in instruction in Electromechanical Technology as established by the TERC/EMT staff at Oklahoma State University.

Interpretive Skills for purposes of this study refers to skill in reading and understanding printed matter, tables, and blueprints.

Manual Skills for purposes of this study refers to those skills used in the operating of tools, equipment, and machines.

Mathematical Skills for purposes of this study refers to the ability to use mathematics to solve work problems.

Personal Relation Skills for purposes of this study refers to skill at dealing with people, such as customers and coworks of other trades.

Practical Job Knowledge for purposes of this study refers to the practical everyday knowledge of work processes and procedures.

TERC Technical Education Research Centers, Inc., is an independent, non-profit, public-service corporation dedicated to the improvement of occupational and technical education throughout the United States.[2]

Theoretical Knowledge for purposes of this study refers to the knowledge of the basic principles and concepts underlying the EMT graduates' work.

FOOTNOTES

[1]U. S. Department of Health, Education, and Welfare. Standard Terminology for Instruction in Local and State School Systems (Washington, 1967).

[2]Technical Education Research Centers, Inc. (TERC). EMT Program Compendium (New York, 1972).

CHAPTER II

REVIEW OF THE LITERATURE

The rapid technological developments in the past two decades has caused significant changes in the occupational structure of the United States. Prior to World War II there were few technicians; today, technicians are involved in almost every aspect of business and industry.

The development of new types of multi-discipline technician training programs is one of the major problems facing the technical educators of today.

The purpose of this study is to facilitate the development of electromechanical technology programs and to provide data for the development of future multi-discipline technologies.

Richard H. P. Kraft (1, p. 13) discussed the problem of technical educators in a recent article.

> As industry is undergoing rapid change in its occupational structure, and as technological change and automation raise the skill level of jobs, the educational system must also undergo a dynamic expansion.

M. W. Roney (2, pp. 1-2) discussed the lack of research in technical education. His criticism was made in the following statement.

> It is paradoxical, in an age of technology where new scientific achievements are becoming almost commonplace, that we have no curriculum theories in education. For a true theory must be based on established facts and we do not have enough facts in education on which to base a theory. Einstein's theory of mass-energy equivalence is a classic example of a pure theory. It consisted of known facts, maticulously assembled, carefully arranged in a new combination, and with a resultant prediction.

> His theory was capable of being tested and the results could be compared with the prediction. The contrast in education is sharp. We do not have comparable theories in education because we start with opinions---not facts. Any combination of opinions results in a new opinion--not a theory. We have scientific data that enables us to put a man in exact orbit around the earth and to return him with still more accumulated data, but we do not have educational data that can be used to formulate a basic curriculum for the preparation of competent technicians--or for that matter good citizens.

The lack of research and development in technical education was short lived. As industry's need for new kinds of technicians became increasingly apparent, technical educators began to formulate the groundwork for the job ahead.

In 1967 a group of professional educators developed an electromechanical technology curriculum for the State of New York (3). The four basic assumptions made by the group were:

1. The need for electromechanical technicians is sufficiently documented.

2. A two-year associate in applied science degree curriculum, which meets state education department requirements, can be designed to satisfactorily prepare electromechanical technicians.

3. Properly selected and oriented industrial consultants are competent to identify and specify the skills, abilities, knowledge, and understandings which various types and grades of electromechanical technicians are expected to use in industry.

4. Properly selected and oriented two-year college technology faculty members are competent to develop curriculum materials and to implement the specifications established by industrial consultants (3, p. 4).

In 1966 a study was conducted by Dr. M. W. Roney at the Oklahoma State University (4). In the study twenty-six industrial organizations were contacted concerning their need for electromechanical technicians. The results of the study were as follows:

> Twenty-two of the 26 organizations included in this phase of the study indicated an expanding need for technicians capable of working with electromechanical systems and devices. At the time this study was conducted these 22 firms employed electronics technicians or mechanical technicians and provided on-the-job training in electronics or mechanics correspondent to individual needs. All of the 22 saw a pressing need for pro-employment training of technical personnel for these occupations (4, p. 26).

The Electromechanical Technology (EMT) Program at Oklahoma State University (OSU) was established following guidelines formulated by Roney (5, p. 1), which is a four-step process; occupational analysis, program planning, program development and testing, and documentation and dissemination of results.

The electromechanical curriculum developed at Oklahoma State University was distinctly different from those used in single specialty technician programs in that unified concepts in both electrical and mechanical principles were taught concurrently.

The actual testing of the EMT program at OSU began in September, 1968, and ended in May, 1971. L. P. Robertson reported in his study (6, p. 32):

> The first graduates of this curriculum appeared to be average both when compared with fellow OSU students not in the curriculum and when compared with occupational students in the nation's junior colleges.

There are three areas suggested by Graney (7) in technical education that need exploration. Where do students come from? What kind of people are they? What do they want? These questions concerning the

electromechanical technology student at Oklahoma State University, have been researched by studies conducted by Robertson (6), Tinnell (8), and Patterson (9).

Summary

Electromechanical technology is a new multi-disciplinary field developed by educators to fulfill the needs of industry. Whether this objective was fulfilled can only be answered by assessing the finished product, the graduate.

The review of literature indicates:

1. Electromechanical technology is one of the few carefully planned and researched technical curriculums in existence.

2. Research concerning electromechanical technology should be a continuing effort in order to maintain the high degree of effectiveness of this program.

FOOTNOTES

[1]Richard H. P. Kraft, "Vocational-Technical Training and Technological Change," Educational Technology (July, 1969).

[2]Maurice W. Roney, "Curriculum Design in Technical Education," (unpublished lecture notes, Oklahoma State University, 1969).

[3]Stanley M. Brodsky, Report of Electromechanical Technology Curriculum Development Project (Brooklyn, December, 1967).

[4]Maurice W. Roney, "Electromechanical Technology. A Field Study of Electromechanical Technician Occupations, Part I," (Stillwater).

[5]Maurice W. Roney, "A Summary Report of a Research Project in Electromechanical Technology" (Stillwater, 1966).

[6]Luther P. Robertson, "An Evaluation of the Electromechanical Technology Curriculum at Oklahoma State University" (unpublished Ed.D. dissertation, Oklahoma State University, 1970).

[7]Maurice R. Graney, The Technical Institute (New York, 1964).

[8]Richard W. Tinnell, "An Examination of Relationships Between Selected Student Entry Parameters and Achievement in an Electromechanical Technology Program" (unpublished M.S. thesis, Oklahoma State University, 1969).

[9]Joseph A. Patterson, "A Study of the Students Enrolled in the Electromechanical Technology Program at Oklahoma State University" (unpublished M.S. thesis, Oklahoma State University, 1970).

CHAPTER III

PROCEDURE AND ANALYSIS OF DATA

This chapter presents the procedures used to collect the needed data for this study and presents this data along with its analysis.

Procedure

The population of this study consisted of all thirty-five graduates of the Pilot Electromechanical Technology (EMT) program conducted at Oklahoma State University from September, 1968 until May, 1970. Although all the students did not successfully fulfill the necessary academic requirements for the associate degree, they successfully completed the prescribed course of study for the EMT program and for purposes of this study were considered to be graduates.

Because of the limited number of graduates involved in this project, a telephone conversation was deemed to be the most practical method of determining the status of each graduate, i.e. working in an EMT occupation, continuing in school, etc. All but five of the graduates were contacted by telephone. Four of the five graduates not contacted were in the Armed Services and one of the graduates could not be located.

Table I illustrates, by graduating class, what numbers of graduates were involved in each of the several occupational and educational patterns listed. The table shows that six of the first year graduates and six of the second year graduates were working full-time in an EMT

or related occupation. Two of the first year graduates and four of the second year graduates were working full-time in occupations not related to EMT. Four of the first year graduates and five of the second year graduates were continuing full-time in school in a field related to EMT. One of the first year graduates was continuing in school in a field not related to EMT. Two of the first year graduates and two of the second year graduates were in the Armed Services. There was one of the first year graduates for which no address could be obtained.

Since the two classes of graduates are comparable in size (17 graduates in the first class and 18 graduates in the second class), it can be seen in Table I that the distribution of graduates among the listed occupational and educational patterns for each of the two classes are nearly equal, with the exception of those graduates working full-time in occupations not related to EMT. Based upon this fairly even distribution and on the findings of Patterson[1], the two classes are considered to be a homogeneous group and no further attempt is made to differentiate between the two classes in this study.

Instrumentation

After considering the purposes and needs of the study, two questionnaires were constructed. One of the questionnaires was designed to elicit information from those graduates working in an EMT or related occupation and the other questionnaire was designed for those graduates continuing in school. Copies of both questionnaires are included in Appendix A and Appendix B.

The mailing list of graduates of the EMT program was compiled from the information obtained by telephone conversations with the graduates.

TABLE I

OCCUPATIONAL AND EDUCATIONAL PATTERNS OF EMT GRADUATES

	1st Year Graduates		2nd Year Graduates		Total	
	Number	Percent	Number	Percent	Number	Percent
Working full-time in an EMT or related occupation	6	35.3	6	33.3	12	34.3
Working full-time in an occupation unrelated to EMT	2	11.7	5	27.8	7	20.0
Continuing full-time in school in a field related to EMT	4	23.6	5	27.8	9	25.7
Continuing full-time in school in a field unrelated to EMT	1	5.9	0	-	1	2.85
In Armed Services	2	11.7	2	11.1	4	11.45
Unemployed seeking work	1	5.9	0	-	1	2.85
Unknown	1	5.9	0	-	1	2.85
TOTAL	17	100.0	18	100.0	35	100.0

A letter of transmittal was formulated and reproduced in quantity. A copy of the transmittal letter is included in Appendix C.

The letter of transmittal, the questionnaire, and a stamped, self-addressed envelope were mailed to the twelve graduates working full-time in an EMT or related occupation. As recommended by Robin,[2] references were made in the letter of the stamped, self-addressed envelope to enhance the factors of convenience and sense of commitment on the part of the respondents.

A follow-up telephone call was used to initiate response from those graduates who had not responded to the original questionnaire within three weeks. The total response of the graduates working full-time in an EMT or related occupation was twelve returned questionnaires for a 100 percent return.

Because all but one of the EMT graduates continuing in school were attending Oklahoma State University (OSU) it was decided that an interview with the graduates would be the best means to elicit the needed data. The interviews were conducted either in person or by telephone. The questions on the prepared questionnaire were read to the subject and his response was recorded by the interviewer. An 80.0 percent response was obtained from the graduates continuing in school.

A questionnaire used as an instrument to collect data will reveal only what the individuals composing the population are willing and able to communicate. It is recognized that the population represents diverse personalities, occupational experiences, backgrounds, and philosophies; however, no attempt was made to analyze the data on the basis of these variables which could have an effect upon this study.

The main weakness and most serious limitation of this study lies in a small number comprising the population. However, wise interpretation of the data from this follow-up study may show significant trends or peculiarities of EMT graduates which will assist in the development of future multidisciplinary technical training programs.

The data from the questionnaire is divided into three major areas: (1) Personal data, (2) Occupational data, and (3) Educational data.

The occupational and educational data are presented in the tables on the following pages. Each table is presented and interpreted in this chapter. The data was processed by tabulating the responses and presenting them on a basis of frequency of response and percentage. Not all the items in all the questionnaires were responded upon, therefore, percentages of response for any one item is based on the total number of responses to that particular item.

The weighted average of the responses was used to determine the mean or average response to each item on the questionnaire sent to those graduates working full-time in an EMT or related occupation.

Occupational Data

Table II pertains to those graduates working full-time in an EMT or related technology. The table lists the various titles as given by the respondents. The Director of Occupational Titles[3] (D.O.T.) shows the job titles given by the respondents to be consistent with or related to those job descriptions listed under either electromechanical or electronic occupations.

TABLE II

JOB TITLES GIVEN BY THOSE GRADUATES WORKING FULL-TIME IN AN EMT OR RELATED OCCUPATION

Associate Engineer	Assistant Production Foreman
Service Representative	Service Manager
Chief Technician	Staff Assistant Technician
Repairman (Electronics)	Switchman
Sales Engineer	Electronics Technician

Engineering Technician

Table III gives the job titles given by those graduates working full-time in occupations not related to EMT.

TABLE III

JOB TITLES GIVEN BY THOSE GRADUATES WORKING FULL-TIME IN AN OCCUPATION UNRELATED TO EMT

Farmer	Carpenter
Supply Clerk	Surveyor

The data in Tables IV through IX illustrates how the graduates, working full-time in an EMT or related occupation, responded to the different questions pertaining to each of several skill areas thought to be necessary for the performance of their jobs. The skill areas for which responses were elicited were: (1) Manual Skills, referring to skills at operating tools, equipment, and machines; (2) Practical Job Knowledge, referring to practical everyday knowledge of work processes and procedures; (3) Theoretical Knowledge, referring to knowledge of the basic principles and concepts underlying the graduates work; (4) Mathematical Skills, referring to the ability to use mathematics to

solve work problems; (5) Communication Skills, referring to skills at speaking, writing, and drafting; (6) Interpretive Skills, referring to skills in reading and understanding printed matter, tables, and blueprints; (7) Clerical Skills, referring to skill at keeping records, making out reports, and other types of routine paper work; and, (8) Personal Relation Skills, referring to skills at dealing with people, such as customers and co-workers of other trades.

Table IV illustrates the responses to the question, "How important is this skill for your present job?" The table shows that one respondent or 8.3 percent of the respondent considered Manual Skills as "not important" for his job. Three respondents or 25.0 percent of the graduates considered Manual Skills to be "of some importance" to their jobs. Three respondents or 25.0 percent considered Manual Skills to be "considerably important" for their jobs. Three of the respondents or 25.0 percent considered Manual Skills to be "of major importance" for the performance of their jobs and two respondents or 16.7 percent felt that Manual Skills were "critically important" to their jobs. The weighted average figured for the responses under Manual Skills gave a value of 3.16 which indicated that the average or mean response to this item was between the two possible responses "considerably important" and "of major importance."

Under Practical Job Knowledge, the table shows that one respondent or 9.1 percent indicated that he considered this skill to be "of some importance" for his job. Two respondents or 18.2 percent indicated that they considered Practical Job Knowledge to be "considerably important" to their jobs. Two respondents or 18.2 percent responded that Practical Job Knowledge was "of major importance" for their jobs and

TABLE IV

RESPONSE TO THE QUESTION, "HOW IMPORTANT IS THIS SKILL FOR YOUR PRESENT JOB?"

	1 Not Important		2 Of Major Importance		3 Considerably Important		4 Of Major Importance		5 Critically Important		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Manual Skills	1	8.3	3	25.0	3	25.0	3	25.0	2	16.7	12	3.16
Practical Job Knowledge	0	-	1	9.1	2	18.2	2	18.2	6	54.5	11	4.36
Theoretical Knowledge	0		1	8.3	1	8.3	3	25.0	7	58.4	12	4.33
Mathematical Skills	1	8.3	2	16.7	3	25.0	4	33.3	2	16.7	12	3.33
Communication Skills	0	-	2	18.2	2	18.2	3	27.3	4	36.3	11	3.82
Interpretive Skills	0	-	0	-	2	16.7	2	16.7	8	66.6	12	4.50
Clerical Skills	1	8.3	3	25.0	3	25.0	1	8.3	4	33.3	12	3.33

Table IV (Continued)

	1 Not Important		2 Of Some Importance		3 Considerably Important		4 Of Major Importance		5 Critically Important		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Personal Relation Skills	1	8.3	1	8.3	2	16.7	1	8.3	7	58.4	12	4.00
Other Skills												

six respondents or 54.5 percent indicated that practical job knowledge was "critically important" for their jobs. The weighted average figured for the responses under Practical Job Knowledge was 4.36. This indicated that the average response to this item fell between the two possible responses "of major importance" and "critically important."

For Theoretical Knowledge, one respondent or 8.3 percent of the total responses indicated that this skill was "of some importance" for the performance of his job. One respondent or 8.3 percent responded that Theoretical Knowledge was "considerably important" for his job. Three respondents or 25.0 percent indicated that Theoretical Knowledge was "of major importance" for their jobs and six respondents or 58.4 percent responded that Theoretical Knowledge was "critically important" for the performance of their jobs. The weighted average for the responses under Theoretical Knowledge was 4.33 which indicated that the average response under Theoretical Knowledge was between the two possible responses "of major importance" and "critically important."

Under Mathematical Skills one respondent or 8.3 percent indicated that this skill was not important for his job. Two respondents or 16.7 percent responded that Mathematical Skills were "of some importance" for the performance of their jobs. Three of the respondents or 25.0 percent responded that Mathematical Skills were "considerably important" for their jobs. Four respondents or 33.3 percent indicated that Mathematical Skills were "of major importance" and two respondents or 16.7 percent said that Mathematical Skills were "critically important" to their jobs. The weighted average figured for the responses under Mathematical Skills gave a value of 3.33. This indicated that the average response under Mathematical Skills fell between

the two possible responses "considerably important" and "of major importance."

For the area of Communication Skills two respondents or 18.2 percent of the total responses indicated that they considered this skill to be "of some importance" for the performance of their jobs. Two respondents or 18.2 percent of the total responses felt that communication skills were "considerably important" to their jobs. Three respondents or 27.3 percent responded that Communication Skills were "of major importance" for the performance of their jobs and four or 36.3 percent of the respondents indicated that Communication Skills were "critically important" to their jobs. The weighted average for the responses under Communication Skills was 3.82 which indicated that the average response to this item was between the two possible responses of "considerably important" and "of major importance."

Under Interpretive Skills two respondents or 16.7 percent indicated that they considered this skill was "considerably important" to their jobs. Two individuals or 16.7 percent of the respondents indicated that Interpretive Skills were "of major importance" for the performance of their jobs and eight respondents or 66.6 percent responded that Interpretive Skills were "critically important" to their jobs. The weighted average for the responses under Interpretive Skills was 4.50. This value for the weighted average indicated that the average responses for this item was between "of major importance" and "critically important."

For the skill area Clerical Skills, one of the respondents or 8.3 percent of the total responses indicated that this skill was "not important" to his job. Three respondents or 25.0 percent responded that

Clerical Skills were "of some importance" for their jobs. Three respondents or 25.0 percent felt Clerical Skills to be "considerably important" for the performance of their jobs. One respondent or 8.3 percent responded that Clerical Skills were "of major importance" for his job and four respondents or 33.3 percent responded that Clerical Skills were "critically important" for their jobs. The value of 3.33 for the weighted average of the responses under Clerical Skills indicated that the average response to this item was between "considerably important" and "of major importance."

Under Personal Relation Skills one respondent or 8.3 percent of the total respondents indicated that he felt this skill was "not important" to his job. One respondent or 8.3 percent responded that Personal Relation Skills were "of some importance" to his job. Two respondents or 16.7 percent indicated that Personal Relation Skills were "considerably important" for the performance of their jobs. One respondent or 8.3 percent of the total respondents felt that Personal Relation Skills were "of major importance" to his job and seven respondents or 58.4 percent of the total felt that this skill was "critically important" to their jobs. The weighted average for the responses under Personal Relation Skills was 4.00 which indicated the average response to this item was "of major importance."

The data in Table V gives the responses to the question, "How often do you perform this skill in your present job?" The table shows that under Manual Skills, one respondent or 8.3 percent indicated that he never performed this skill in his present job. Six respondents or 50.0 percent responded that they performed Manual Skills daily. Four of the respondents or 33.3 percent indicated they performed Manual

TABLE V

RESPONSE TO THE QUESTION, "HOW OFTEN DO YOU PERFORM THIS SKILL IN YOUR PRESENT JOB?"

	1 Never		2 Daily		3 Weekly		4 Monthly		5 Annually		Total	Weighted
	No.	%	No.	%	No.	%	No.	%	No.	%	Response	Average
Manual Skills	1	8.3	6	50.0	4	33.3	1	8.3	0	-	12	2.41
Practical Job Knowledge	0	-	10	90.9	1	9.1	0	-	0	-	11	2.09
Theoretical Knowledge	0	-	11	100.0	0	-	0	-	0	-	11	2.00
Mathematical Skills	1	8.3	7	58.4	3	25.0	1	8.3	0	-	12	2.33
Communication Skills	0	-	8	72.8	2	18.2	1	9.1	0	-	11	2.36
Interpretive Skills	0	-	11	91.7	1	8.3	0	-	0	-	12	2.09
Clerical Skills	2	16.7	7	63.6	0	16.7	1	8.3	0	-	12	2.16
Personal Relation Skills	1	8.3	10	83.4	1	-	1	8.3	0	-	12	2.50

skills weekly in their jobs, and one respondent or 8.3 percent of the total responded that he performed Manual Skills monthly. The weighted average for the responses to this question pertaining to Manual Skills was 2.41, which indicated that the average response was between the two possible responses of "daily" and "weekly."

For the skill area Practical Job Knowledge, ten respondents or 90.9 percent of the total response indicated they performed this skill daily and one respondent or 9.1 percent responded that he used this skill weekly in his present job. The weighted average for this item was 2.36 indicating that the average response to this item was between "daily" and "weekly."

Under Theoretical Knowledge, 100.0 percent of the total of eleven respondents indicated they used this skill daily in the performance of their jobs.

One of the respondents or 8.3 percent of the respondents indicated that he never used Mathematical Skills in the performance of his job. Seven of the respondents or 58.4 percent responded that they used Mathematical Skills daily. Three respondents or 25.0 percent indicated that they used Mathematical Skills weekly in the performance of their jobs and one respondent or 8.3 percent said he used Mathematical Skills monthly. The weighted average for the responses to this item pertaining to Mathematical Skills was 2.33. This indicated that the average response to this item was between the two possible responses "daily" and "weekly."

For Communication Skills, eight of the respondents or 72.8 percent of the total number responding to this item indicated that they performed this skill daily. Two respondents or 18.2 percent indicated

they used Communication Skills weekly and one respondent said he used this skill monthly. The weighted average figured for the responses under this item gave a value of 2.36 which indicated that the average response was between the two possible responses of "daily" and "weekly."

Under Interpretive Skills, eleven of the respondents or 91.7 percent of the total respondents indicated they used this skill daily and one respondent or 8.3 percent responded that he used Interpretive Skills weekly in his job. The weighted average for this item was 2.09, indicating that the average response to this item was between "daily" and "weekly."

For Clerical Skills, two respondents or 16.7 percent of the total response indicated they never used this skill in their jobs. Seven respondents or 63.6 percent responded that they used Clerical Skills daily. Two respondents or 16.7 percent indicated that they used Clerical Skills weekly and one respondent or 8.3 percent of the respondents indicated he used the skill monthly. The weighted average for the responses under Clerical Skills was 2.16, which indicated that the average response was between "daily" and "weekly."

One respondent or 8.3 percent of the total respondents indicated that he never used Personal Relation Skills in his work. Ten respondents or 83.8 percent indicated they used Personal Relation Skills daily and one of the respondents or 8.3 percent responded that he use this skill monthly. The weighted average of the responses under Personal Relation Skills was 2.50. This indicated that the average or mean response under this item was between "daily" and "weekly."

Table VI indicates the responses to the question, "How much of this skill was learned at OSU?" The data from the table shows that five respondents or 45.5 percent of the total respondents indicated that they learned very little Manual Skills at OSU. Five of the respondents or 45.5 percent indicated that they learned about 50 percent of their Manual Skills at OSU and one respondent or 9.1 percent responded that he learned a large amount of Manual Skills at OSU. The weighted average for this item was 2.63, which indicated that the average or mean response to this question under Manual Skills was between the two possible responses of "very little" and "about 50 percent."

Under Practical Job Knowledge, five respondents or 45.5 percent of the total response said they learned very little of this skill at OSU. Five respondents or 45.5 percent indicated that they learned about 50 percent of their Practical Job Knowledge at OSU and one respondent or 9.1 percent responded that he learned a large amount of his Practical Job Knowledge at OSU. The weighted average for the responses to this item was 2.63. This indicated that the average or mean response to this item was between the two possible responses of "very little" and "about 50 percent."

For Theoretical Knowledge, three of the respondents or 25.0 percent responded that they learned very little of this skill at OSU. Four of the respondents or 33.3 percent indicated that they learned about 50 percent of their Theoretical Knowledge at OSU. Four of the respondents or 33.3 percent said that they learned a large amount of their Theoretical Knowledge at OSU and one respondent or 8.3 percent responded that he learned almost all of his Theoretical Knowledge at OSU. The

TABLE VI

RESPONSE TO THE QUESTION, "HOW MUCH OF THIS SKILL WAS LEARNED AT O.S.U.?"

	1 None		2 Very Little		3 About 50%		4 Large Amount		5 Almost All		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Manual Skills	0	-	5	45.5	5	45.5	1	9.1	0	-	11	2.63
Practical Job Knowledge	0	-	5	45.5	5	45.5	1	9.1	0	-	11	2.63
Theoretical Knowledge	0	-	3	25.0	4	33.3	4	33.3	1	8.3	12	3.25
Mathematical Skills	0	-	3	27.3	2	18.2	6	54.5	0	-	11	3.26
Communicaion Skills	1	9.1	3	27.3	5	45.5	2	18.2	0	-	11	2.72
Interpretive Skills	1	8.3	3	25.0	5	41.7	2	16.7	1	8.3	12	2.91
Clerical Skills	1	8.3	5	41.7	2	16.7	4	33.3	0	-	12	2.75
Personal Relation Skills	3	25.0	6	50.0	2	16.7	1	8.3	0	-	12	2.00

weighted average for the responses to this item was 3.25, which indicated that the average response to this item was between the two possible responses of "about 50 percent" and "large amount."

For Mathematical Skills, three respondents or 27.3 percent responded they learned very little of the Mathematical Skill used in their jobs at OSU. Two of the respondents or 18.2 percent indicated that they learned about 50 percent of the Mathematical Skills used in their jobs at OSU and six respondents or 54.5 percent said they learned a large amount of the needed math skills for their jobs at OSU. The weighted average of the responses to this item was 3.26, which indicated that the mean response was between "about 50 percent" and "large amount."

Under Communication Skills, one graduate or 9.1 percent of the total respondents to this item, indicated that he learned none of this skill at OSU. Three respondents or 27.3 percent said they learned very little of the Communication Skills used at OSU. Five of the graduates or 45.5 percent of the total response indicated that they learned about 50 percent of this skill at OSU and two or 18.2 percent of the respondents indicated that they learned a large amount of their Communication Skills at OSU. The weighted average of 2.72 for this item indicated that the average or mean response for Communication Skills was between the two possible responses of "very little" and "about 50 percent."

Under Interpretive Skills, one of the graduates or 8.3 percent of the total respondents indicated that none of the Interpretive Skills used in his job were learned at OSU. Three respondents or 25.0 percent responded that very little Interpretive Skill was learned at OSU. Five

or 41.7 percent of the respondents to this item said that about 50 percent of the Interpretive Skills used in their jobs were learned at OSU. Two of the respondents or 16.7 percent responded that a large amount of the Interpretive Skills used in their jobs were learned at OSU and one respondent or 8.3 percent of the total said that almost all of his Interpretive Skills were learned at OSU. A weighted average value of 2.91 for this item indicated that the average response was between "very little" and "about 50 percent."

Under the item labeled Clerical Skills, one respondent or 8.3 percent of the total number responding to this item indicated that none of the Clerical Skills used in his job were learned at OSU. Five of the respondents or 41.7 percent responded that very little of the Clerical Skills used in his job were learned at OSU. Two graduates or 16.7 percent of the respondents indicated that about 50 percent of the Clerical Skills used in their jobs were learned at OSU and four or 33.3 percent of the respondents indicated that a large amount of the required Clerical Skills for their jobs were learned at OSU. The weighted average for the responses under this item was 2.75. This value for the weighted average indicated that the mean response was somewhere between "very little" and "about 50 percent."

Under Personal Relation Skills, three of the graduates or 25.0 percent of the respondents indicated none of their Personal Relation Skills were learned at OSU. Six or 50.0 percent of the respondents responded that very little of the Personal Relation Skills used in their jobs were learned at OSU. Two of the respondents or 16.7 percent indicated that about 50 percent of their Personal Relation Skills were learned at OSU and one respondent or 8.3 percent said that a large

amount of his Personal Relation Skills were learned at OSU. The weighted average for the responses under Personal Relation Skills was 2.00, which indicated that the mean or average response to this item was "very little."

Table VII presents information pertaining to where the graduates learned most about the different skills listed on the questionnaire and gives the responses to the question, "Where did you learn most about this skill?" The table indicates that under the skill area of Manual Skills, three graduates or 25.0 percent of the total responses to this item indicated that most of this skill was learned at OSU. Five of the respondents or 41.7 percent responded that most of their Manual Skills were learned on their present jobs and four graduates or 33.3 percent of the respondents indicated that they learned their Manual Skills elsewhere, meaning somewhere other than their present jobs, apprentice programs, or at OSU. The weighted average for the responses under Manual Skills was 3.83, which indicated that the mean or average response to this item was between the two possible responses of "apprentice program" and "on present job."

Under Practical Job Knowledge, four of the respondents or 40.0 percent of the total number responding indicated that they learned most about this skill at OSU. Three respondents or 30.0 percent said they learned most about Practical Job Knowledge on their present jobs and three of the respondents or 30.0 percent indicated they learned most about Practical Job Knowledge elsewhere. The weighted average of the responses to this item was 3.50, indicating that the average response to this item was between "apprentice programs" and "on present job."

TABLE VII

FREQUENCY OF RESPONSE TO THE QUESTION, "HOW DID YOU LEARN MOST ABOUT THIS SKILL?"

	1 Know Very Little About		2 At O.S.U.		3 Apprentice Program		4 On Present Job		5 Elsewhere		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Manual Skills	0	-	3	25.0	0	-	5	46.7	4	33.3	12	3.83
Practical Job Knowledge	0	-	4	40.0	0	-	3	30.0	3	30.0	10	3.50
Theoretical Knowledge	0	-	4	33.3	1	8.3	6	50.0	1	8.3	12	3.33
Mathematical Skills	0	-	7	63.6	0	-	2	18.2	2	18.2	11	2.91
Communication Skills	0	-	3	27.3	0	-	3	27.3	5	45.5	11	3.91
Interpretive Skills	0	-	3	25.0	0	-	6	50.0	3	25.0	12	3.75

Table VII (Continued)

	1 Know Very Little About		2 At O.S.U.		3 Apprentice Program		4 On Present Job		5 Elsewhere		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Clerical Skills	0	-	4	33.3	0	-	5	41.7	3	25.0	12	3.58
Personal Relation Skills	1	8.3	0	-	0	-	6	50.0	5	41.7	12	4.17

For Theoretical Knowledge, four of the respondents or 33.3 percent responded that most of this type knowledge required for their jobs was obtained at OSU. One respondent or 8.3 percent of the respondents indicated that most of the Theoretical Knowledge used in his job was learned in an apprentice program. Six graduates or 50.0 percent of the total respondents to this item indicated that most of the Theoretical Knowledge needed for their jobs was learned on their present jobs and one respondent or 8.3 percent of the total respondents said that most of the Theoretical Knowledge required for his job was learned somewhere other than OSU, and apprentice program, or on his present job. The weighted average for the responses to this item was 3.33, which indicated that the mean response for Theoretical Knowledge was between the two possible responses of "apprentice program" and "on present job."

Under Mathematical Skills, seven respondents or 63.6 percent of the number responding to this item indicated that most of the Mathematical Skills required for their jobs was learned at OSU. Two respondents or 18.2 percent said that most of the Mathematical Skills used in their jobs were learned on their present jobs and two of the respondents or 18.2 percent responded that most of the Mathematical Skills needed for their present jobs was learned some place other than OSU, in an apprentice program, or on their present jobs. The weighted average for the responses under Mathematical Skills was 2.91. This indicated that the mean or average response to this item was between the two possible responses of "at OSU" and "apprentice program."

Under Communication Skills, three respondents or 27.3 percent of those responding to this item indicated that most of the Communication Skills required for their present jobs were learned at OSU. Three

respondents or 27.3 percent responded that most of the Communication Skills used in their jobs was learned on their present jobs and five respondents or 45.5 percent indicated that most of the Communication Skills necessary for their jobs was learned somewhere other than OSU, an apprentice program, or on their present job. The weighted average for this item was 3.91, which indicated that the mean or average response under Communication Skills was between "apprentice program" and "on present job."

For Interpretive Skills, three respondents or 25.0 percent of the total number responding to this item indicated that most of the Interpretive Skills required for their present jobs were learned at OSU. Six respondents or 50.0 percent responded that most of the Interpretive Skills necessary to their jobs were learned on their present jobs and three respondents or 25.0 percent indicated that most of the Interpretive Skills required of their jobs was learned at other places than at OSU, in an apprentice program, or on their present jobs. The weighted average for the responses to this item was 3.75. This indicated the mean response to be between the two possible responses of "apprentice program" and "on present job."

Under the skill area of Clerical Skills, four respondents or 33.3 percent of the total number responding to this item indicated that most of the Clerical Skills necessary for their jobs was learned at OSU. Five respondents or 41.7 percent of the respondents indicated that most of the Clerical Skills required for their jobs was learned on their present jobs and three of the respondents or 25.0 percent responded that most of the Clerical Skills necessary for their jobs was learned somewhere other than at OSU, in an apprentice program, or at their

present jobs. The weighted average for this item was 3.58, which showed the average response to this item to be between the two possible responses of "apprentice program" and "or present job."

One respondent or 8.3 percent of the total respondents to the item of Personal Relation Skills indicated that he knew very little about the Personal Relation Skills necessary for his job. Six respondents or 50.0 percent responded that they learned most about Personal Relation Skills on their present jobs and five of the respondents or 41.7 percent indicated that they learned most about Personal Relation Skills somewhere other than at OSU, in an apprentice program, or on their present job. The weighted average for the responses to this item was 4.17, which showed the mean response for this item to be between the two possible responses of "on present job" and "elsewhere."

The information given in Table VIII is the frequency of responses for the various skill areas in answer to the question, "How much supervision do you receive in this skill?" The table shows that with respect to Manual Skills, four respondents or 36.3 percent of the total number responding to this item indicated that they received no supervision of their Manual Skills in the performance of their jobs. Five respondents or 45.5 percent indicated that they received very little supervision of their Manual Skills on their present jobs and two respondents or 18.2 percent indicated that they received supervision of their Manual Skills about 50.0 percent of the time. The weighted average for the responses under Manual Skills was 1.83. This indicated that the average or mean response to this item was between the two possible responses of "none" and "very little."

TABLE VIII

RESPONSE TO THE QUESTION, "HOW MUCH SUPERVISION DO YOU RECEIVE IN THIS SKILL?"

	1 None		2 Very Little		3 About 50%		4 Large Amount		5 Too Much		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Manual Skills	4	36.3	5	45.5	2	18.2	0	-	0	-	11	1.82
Practical Job Knowledge	2	18.2	6	54.5	1	9.1	2	18.2	0	-	11	2.27
Theoretical Knowledge	0	-	8	66.6	1	9.1	3	25.0	0	-	12	2.58
Mathematical Skills	7	58.4	4	33.3	0	-	1	8.3	0	-	12	1.58
Communication Skills	6	54.5	2	18.2	1	9.1	2	18.2	0	-	11	1.91
Interpretive Skills	2	16.7	8	66.6	0	-	2	16.7	0	-	12	2.17
Clerical Skills	3	27.3	4	36.3	2	18.2	2	18.2	0	-	11	2.27
Personal Relation Skills	6	50.0	2	16.7	2	16.7	2	16.7	0	-	12	2.00

With respect to Practical Job Knowledge, two respondents or 18.2 percent of those responding to this item indicated they did not receive any supervision in Practical Job Knowledge in the performance of their jobs. Six of the respondents or 54.5 percent indicated that they received very little supervision in Practical Job Knowledge. One respondent or 9.1 percent responded that his Practical Job Knowledge skills were supervised about 50 percent of the time on his job and two respondents or 18.2 percent of those responding to this item indicated that they received a large amount of supervision in the Practical Job Knowledge skills necessary to their jobs. The weighted average value of 2.27 for the responses to this item indicated that the mean or average response to this item was between the two possible responses of "very little" and "about 50 percent."

With respect to Theoretical Knowledge, eight of the respondents to this item or 66.6 percent responded that they received very little supervision in this skill area on their present job. One respondent or 9.1 percent indicated that he was supervised about 50 percent of the time in the Theoretical Knowledge necessary for his job and three of the respondents or 25.0 percent said they received a large amount of supervision in the Theoretical Knowledge used in their jobs. The weighted average of the responses under Theoretical Knowledge was 2.58, which indicated the mean response was between "very little" and "about 50 percent."

Under Mathematical Skills, seven of the respondents or 58.4 percent of the total number responding to this item indicated they didn't receive any supervision in the performance of the Mathematical Skills necessary to their jobs. Four respondents or 33.3 percent responded

that they received supervision of their Mathematical Skills about 50 percent of the time and one respondent or 8.3 percent of the total response to this item said that he received a large amount of supervision with his Mathematical Skills. The weighted average for the responses to this item was 1.58. This value for the weighted average indicated that the average response to this item was between the two possible responses of "none" and "very little."

For Communication Skills, six of the respondents or 54.5 percent of those responding to this item indicated that they didn't receive any supervision in the Communication Skills on their present jobs. Two respondents or 18.2 percent responded that they received very little supervision in the Communication Skills on their jobs. One respondent or 9.1 percent said he was supervised about 50 percent of the time in his Communication Skills and two respondents or 18.2 percent indicated they were supervised in the Communication Skills a large amount of the time. The weighted average value of 1.91 for the responses to this item indicates the mean response to be between the two possible responses of "none" and "very little."

With respect to Interpretive Skills, two of the respondents or 16.7 percent of those responding to this item indicated they didn't receive any supervision in this skill on their present jobs. Eight respondents or 66.6 percent responded that they received very little supervision of their Interpretive Skills and two of the respondents or 16.7 percent indicated that they were supervised a large amount of the time in their Interpretive Skills. The weighted average for this item was 2.17 indicating that the mean or average response to this item was between the two possible responses of "very little" and "about 50 percent."

For Clerical Skills, three respondents or 27.3 percent of the total number responding to this item indicated they didn't receive any supervision in the Clerical Skills they performed on their present jobs. Four respondents or 36.3 percent responded that they were supervised very little in the Clerical Skills they performed on the job. Two respondents or 18.2 percent said they were supervised about 50 percent of the time in Clerical Skills they performed on their jobs and two respondents or 18.2 percent indicated they received a large amount of supervision in the Clerical Skills they performed. The weighted average for the responses to this item was 2.27 indicating that the average response to this item was between the two possible responses of "very little" and "about 50 percent."

Under Personal Relation Skills, six respondents or 50.0 percent of those responding to this item indicated that they didn't receive any supervision in Personal Relation Skills on their jobs. Two individuals or 16.7 percent of the respondents indicated they received very little Personal Relation Skills supervision. Two respondents or 16.7 percent responded that they were supervised in Personal Relation Skills about 50 percent of the time and two respondents or 16.7 percent said they received a large amount of supervision in this skill. The weighted average for the responses to this item was 2.00, which indicated that the average or mean response under Personal Relation Skills was "very little."

Table IX deals with the data relating to how much supervision of other workers the graduates working full-time in an EMT or related occupation are engaged in. The table gives the responses to the question, "How much do you supervise others in this skill?" The data

TABLE IX

RESPONSE TO THE QUESTION, "HOW MUCH DO YOU SUPERVISE OTHERS IN THIS SKILL?"

	1 None		2 Some But Not Much		3 50% of The Time		4 Large Amount		5 All The Time		Total Response	Weighted Average
	No.	%	No.	%	No.	%	No.	%	No.	%		
Manual Skills	8	66.6	2	16.7	0	-	1	8.3	1	8.3	12	1.75
Practical Job Knowledge	1	9.1	6	54.5	2	18.2	1	9.1	1	9.1	11	2.54
Theoretical Knowledge	2	16.7	6	50.0	2	16.7	1	8.3	1	8.3	12	2.42
Mathematical Skills	5	41.7	6	50.0	0	-	1	8.3	0	-	12	1.75
Communication Skills	6	54.5	3	27.3	0	-	1	9.1	1	9.1	11	1.91
Interpretive Skills	5	41.7	3	25.0	1	8.3	2	16.7	1	8.3	12	2.25
Clerical Skills	8	66.6	2	16.7	1	8.3	0	-	1	8.3	12	1.67
Personal Relation Skills	9	75.0	1	8.3	0	-	1	8.3	1	8.3	12	1.67

in the table indicates that eight of the respondents or 66.6 percent of those responding to this item responded that they didn't supervise anyone in the Manual Skills. Two respondents or 16.7 percent indicated that they supervised some but not much in the Manual Skills. One of the respondents or 8.3 percent responded that he supervised others a large amount of time in Manual Skills and one individual or 8.3 percent said that he supervised others all the time in Manual Skills. The weighted average of the responses to this item was 1.75, which indicated that the mean response was between "none" and "some but not much."

With respect to Practical Job Knowledge, one of the respondents or 9.1 percent of those responding to this item indicated that he didn't supervise any in this skill. Six respondents or 54.5 indicated that they supervised other workers some, but not much in Practical Job Knowledge. Two of the respondents to this item or 18.2 percent indicated that they supervised other workers in Practical Job Knowledge about 50 percent of the time. One respondent or 9.1 percent responded that he supervised others in Practical Job Knowledge a large portion of the time and one respondent indicated that he supervised other workers in this skill all the time. The weighted average of the responses to this item was 2.54. This indicated that the average response to this item was between the two possible responses of "some but not much" and "50 percent of the time."

Under Theoretical Knowledge, two respondents or 16.7 percent of those responding to this item indicated that they didn't supervise anyone in this skill. Six of the respondents or 50.0 percent said they supervised other individuals in the Theoretical Knowledge necessary

for their jobs some, but not much. Two respondents or 16.7 percent responded that they supervised others in Theoretical Knowledge about 50 percent of the time. One respondent or 8.3 percent indicated that he supervised people in Theoretical Knowledge a large amount of the time and one respondent or 8.3 percent said he supervised other people in the Theoretical Knowledge necessary to his work all of the time. The weighted average of 2.42 for the responses to this item indicated that the mean response to this item was between "some but not much" and "50 percent of the time."

Under Mathematical Skills, five of the respondents or 41.7 percent of those responding to this item indicated that they didn't supervise anyone in the performance of this skill. Six of the respondents or 50 percent responded that they supervised others some, but not much in Mathematical Skills and one respondent or 8.3 percent indicated that he supervised others a large amount of the time in Mathematical Skills. The weighted average for this item fell between the two possible responses of "none" and "some, but not much."

For Communication Skills, six of the respondents or 54.5 percent of the total number responding to this item indicated that they didn't supervise anyone in this skill. Three of the respondents or 27.3 percent responded that they supervised other people in Communication Skills some, but not much. One respondent or 9.1 percent indicated that he supervised other people in the Communication Skills a large portion of the time and one respondent or 9.1 percent said that he supervised others in this skill all of the time. The weighted average for the responses to this item was 1.91, which indicated that the

average response under Communication Skills was between the two possible responses of "none" and "some, but not much."

Under the skill area of Interpretive Skills, five respondents or 41.7 percent of those responding indicated that they didn't supervise any in this skill. Three of the respondents or 25.0 percent responded that they supervised others in Interpretive Skills some, but not much. One respondent or 8.3 percent indicated that he supervised others in Interpretive Skills about 50 percent of the time. Two respondents or 16.7 percent said that they supervised others in Interpretive Skills a large portion of the time and one respondent or 8.3 percent indicated that he supervised other people in this skill all the time. The weighted average of the responses to this item was 2.25. This indicated that the mean or average response to this item fell between the two possible responses of "some, but not much" and "about 50 percent of the time."

Under Clerical Skills, eight respondents or 66.6 percent of th total number responding to this item indicated that they didn't supervise anyone in the Clerical Skills used on their jobs. Two respondents or 16.7 percent responded that they supervised in the Clerical Skills some, but not much. One respondent or 8.3 percent said that he supervised others in Clerical Skills about 50 percent of the time and one respondent or 8.3 percent indicated that he supervised others in this skill all of the time. The weighted average of the responses to this item was 1.67, which indicated that the average response to this item was between the two possible responses of "none" and "some, but not much."

For the Personal Relation Skills, nine respondents or 75.0 percent of those responding to this item indicated that they didn't supervise anyone in this skill area. One respondent or 8.3 percent indicated that he supervised others in Personal Relation Skills some, but not much. One respondent said that he supervised others in Personal Relations a large amount of the time and one respondent or 8.3 percent indicated that he supervised others in Personal Relation Skills all of the time. The weighted average for the responses to this item was 1.67. This indicated that the average response to this item was between "none" and "some, but not much."

Table X deals with the graduates attitudes concerning further training in each of the listed skill areas. The table indicates the frequency of response to the question, "Do you feel a need for more instruction in this area?"

Under Manual Skills, four respondents or 50.0 percent of those responding to this item indicated they felt a need for more instruction in this skill and four respondents or 50.0 percent responded that they didn't feel they need more training in the Manual Skills.

In regard to Practical Job Knowledge, six respondents or 66.6 percent of the total response said they felt a need for more instruction in this skill and three of the respondents or 33.3 percent felt they didn't require more training in Practical Job Skills.

For Theoretical Knowledge, eight respondents or 80.0 percent of those responding to this item felt they needed more instruction in this area and two respondents or 20.0 percent indicated they did not require more training in Theoretical Knowledge.

TABLE X

RESPONSE TO THE QUESTION, "DO YOU FEEL A NEED FOR MORE INSTRUCTION IN THIS AREA?"

	Yes		No		
	Number	Percent	Number	Percent	Total Response
Manual Skills	4	50.0	4	50.0	8
Practical Job Knowledge	6	66.6	3	33.3	9
Theoretical Knowledge	8	80.0	2	20.0	10
Mathematical Skills	6	60.0	4	40.0	10
Communication Skills	5	50.0	5	50.0	10
Interpretive Skills	5	62.5	3	37.5	8
Clerical Skills	3	30.0	7	70.0	10
Personal Relation Skills	4	44.4	5	55.5	9

Under Mathematical Skills, six respondents or 60.0 percent of the total number responding to this item responded that they felt a need for more training in this skill and four respondents or 40.0 percent indicated they didn't require further instruction in Mathematical Skills.

With respect to Communication Skills, five respondents or 50.0 percent of those responding to this item indicated they felt a need for more instruction in this skill and five respondents or 50.0 percent responded they didn't require more training in Communication Skills.

Under Interpretive Skills, five of the respondents that responded to this item or 62.5 percent responded that they felt a need for more instruction in this area and three respondents or 37.5 percent said they didn't require more instruction in Interpretive Skills.

For Clerical Skills, three respondents or 30.0 percent of those responding to this item indicated they felt they required more training in this skill area and seven respondents or 70.0 percent felt they didn't require more Clerical Skills training.

Under Personal Relation Skills, four or 44.4 percent of the respondents to this item indicated they felt they required more instruction in this skill and five of the respondents or 55.5 percent responded that they did not feel a need for more training in Personal Relation Skills.

Educational Data

The questionnaire used to elicit information from those EMT graduates continuing their education consisted of the following four questions.

1. Why did you decide to continue your education?
2. What field of study are you now in?
3. How does EMT training relate to your current field?
4. What do you plan to do when you graduate?

Following is the responses to question number one on the questionnaire.

1. To obtain a better job and I would like to teach.
2. To earn a B.S. degree.
3. At the time an associate degree was insufficient to continue my career.
4. I wanted to obtain a B.S. degree.
5. The Army was after me.
6. To wait for the job market to open up. Couldn't find a desirable job.
7. Best opportunity to continue in education for a better job in the future.
8. Decided not to work in the technical field. I would rather teach.

Under question number two on the questionnaire, four of the respodents said they were continuing their education in Technical Education, two said they were continuing in Engineering Technology, or was in Electronics Technology, and one was continuing his study in Physical Education.

The following responses were given in reply to question number three on the questionnaire.

1. To expand on my knowledge with additional courses such as engineering, science, and math.

2. To better prepare myself to go into electronics industry.

3. To continue in electronic courses such as radar and digital.

4. It will be related to what I will teach.

5. Basically all the training received in EMT assists me in my current field, all relate to electronics.

6. Only as a second teaching field.

7. It related very well to my field since my field is general technology.

8. Yes, I'm in general technology still taking electronic and mechanical subjects.

The following responses were obtained from question number four on the questionnaire.

1. Work in EMT associated area in industry.

2. Work in electronics industry, (1) United Fibers, (2) General Electric, or (3) LTV.

3. Work in industry in electronics, a technical job, or in audio industry.

4. Work in industry for a few years and then I hope to teach in a junior college.

5. Continue my career in the field of electronics.

6. Work for Cities Service Oil Company.

7. Go to work as soon as possible.

8. Teach

FOOTNOTES

[1]Joseph A. Patterson, "A Study of the Students Enrolled in the Electromechanical Technology Program at Oklahoma State University" (unpublished M.S. thesis, Oklahoma State University, 1970).

[2]Stanley S. Robin, "A Procedure for Securing Returns to Mailed Questionnaires," Sociology and Social Research, Vol. 50, No. 1, (October, 1965), pp. 24-25.

[3]United States Department of Labor, Dictionary of Occupational Titles (Washington, 1965).

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The primary objective of this study was to gather, compile and document information concerning the graduates of the two-year pilot Electromechanical Technology Program conducted at Oklahoma State University in order to provide knowledge and facts that will be helpful in designing, organizing and implementing future cross-disciplinary technician training programs.

A questionnaire containing 42 pertinent items was prepared and mailed to twelve graduates working in an electromechanical or related occupation. Another questionnaire containing four items was used to elicit needed information from the ten graduates continuing in school. Of the total number of 22 graduates working in an EMT or related occupation or continuing in school returns were received from 20 individuals or 91.0 percent of the total.

Conclusions

The findings of this study can be most effectively reported by responding to the research questions posed in Chapter I. The answers to the following questions are based on an analysis of the information contained in the preceding chapter.

Research Question 1

What were the particular occupational and educational patterns of the graduates of the two-year pilot Electromechanical Technology Program at Oklahoma State University? Twelve or 34.3 percent of the graduates were working full-time in an EMT or related occupation, seven or 20.0 percent of the graduates were working full-time in an occupation unrelated to EMT, nine or 25.7 percent of the graduates were continuing in school in a field related to EMT, one or 2.85 percent was continuing in school in a field unrelated to EMT, four or 11.45 percent were in the Armed Services, and one or 2.85 percent of the graduates was unemployed.

Research Question 2

What particular skill areas did the EMT graduates working full-time in an EMT or related occupation consider most important for the performance of their jobs? The graduates ranked the listed skill areas as to importance to their jobs as follows:

1. Interpretive Skills
2. Practical Job Knowledge
3. Theoretical Knowledge
4. Personal Relation Skills
5. Communication Skills
6. Clerical Skills
7. Mathematical Skills
8. Manual Skills

Research Question 3

What amount of the skills used in the performance of the EMT graduates' jobs working in an EMT or related occupation were learned at Oklahoma State University? The average response to this question indicated that the graduates learned very little to fifty percent of the interpretive skills, practical job knowledge, theoretical knowledge, personal relation skills, communication skills, clerical skills, and manual skills used on their jobs at OSU. The average response for mathematical skills indicated they learned from fifty percent to a large amount of this skill at OSU.

Research Question 4

Where did the graduates working in an EMT or related occupation learn most about the skills used in the performance of their jobs? The average response to this question indicated that those graduates working in an EMT or related occupation learned most about interpretive skills, practical job knowledge, theoretical knowledge, communication skills, clerical skills, and manual skills in an apprentice program or on their present jobs. The average response indicated the graduates learned most about personal relation skills on their present jobs or some place other than OSU, an apprentice program, or their present jobs. The average response for mathematical skills indicated that graduates learned most about this skill at OSU or in an apprentice program.

Research Question 5

To what extent did the EMT graduates working in an EMT or related occupation receive supervision in the skills necessary to the performance of their jobs? The average response to this question indicated the graduates were supervised very little to fifty percent of the time in interpretive skills, practical job knowledge, theoretical knowledge, and clerical skills. The average response also indicated they received none to very little supervision in personal relation skills, communication skills, mathematical skills, and manual skills.

Research Question 6

To what extent did the EMT graduates working in an EMT or related occupation supervise others in the skills used in the performance of their jobs? The average response to this question indicated the graduates supervised other workers not very much to fifty percent of the time in interpretive skills, practical job knowledge, and theoretical knowledge. The average response showed that the graduates supervised others none or not very much in personal relation skills, communication skills, clerical skills, mathematical and manual skills.

Research Question 7

In what skill areas did the EMT graduates working in an EMT or related occupation feel they need more training? Five or 62.5 percent of the graduates said they felt a need for more training in interpretive skills, six or 50.0 percent of the graduates felt they need more training in practical job knowledge, eight or 66.6 percent felt they

needed more training in theoretical knowledge, four or 33.3 percent felt they needed more training in personal relation skills, five or 41.6 percent felt a need for more training in communication skills, three or 25.0 percent said they felt they needed more training in clerical skills, six or 50.0 percent indicated they needed more training in mathematical skills, and four or 33.3 percent felt they needed more manual skill training.

Research Question 8

What were the stated reasons of the EMT graduates continuing in school for continuing their educations? Seven of the graduates or 70.0 percent were continuing in school in or to prepare for better jobs. One graduate was continuing in school to avoid the Armed Services.

Research Question 9

In what particular fields of study were the EMT graduates continuing their education? Four of the graduates or 40.0 percent were continuing their education in Technical Education, two or 20.0 percent were continuing their education in Engineering Technology, one or 10.0 percent was continuing his education in Physical Education.

Research Question 10

What did the EMT graduates continuing in school plan to do upon graduating? Seven of the graduates planned to work in industry upon graduating in an EMT or related field and one graduate planned to enter the field of education as a teacher in a field unrelated to technology.

Recommendations

On the basis of the information compiled in this study the following recommendations are suggested:

1. Further studies should be made of the employers of the EMT graduates in order to refute or substantiate the findings of this study.

2. Contact with the EMT graduates should be maintained to determine what skill areas should receive emphasis in future electromechanical technician training programs.

3. Further studies should be conducted to determine the career objectives of EMT graduates and how present EMT programs can best prepare the graduates to meet these objectives.

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APPENDIX A

QUESTIONNAIRE NUMBER ONE

NAME _____ (Last / First / Middle) ADDRESS _____ (Street / City / State / Zip Code) JOB TITLE _____

EMPLOYER _____ LOCATION _____ (City / State) NAME OF SUPERVISOR _____

For each of the skill areas listed below, answer the questions at the right. Indicate your answers by marking appropriate boxes.	How important is this skill for your present job?					How often do you perform this skill in your present job?					How much of this skill was learned at OSU?					Where did you learn most about this skill?					How much supervision do you receive in this skill?					How much do you supervise others in this skill?					Do you feel a need for more instruction or training in this area?	
	Not important	Of some importance	Considerably important	Of major importance	Critically important	Never	Daily	Weekly	Monthly	Annually	None	Very little	About 50%	Large amount	Almost all	Know very little	At OSU	Apprentice program	On present job	Elsewhere	None	Very little	About 50%	Large amount	Too much	None	Some but not much	50% of the time	Large amount	All the time	NO	YES
Manual Skills: Refers to skill at operating tools, equipment, machines etc.																															
Practical Knowledge: Refers to practical everyday knowledge of work processes, procedures etc.																															
Theoretical Knowledge: Refers to knowledge of the basic principles and concepts underlying your work.																															
Mathematical Skills: Refers to ability to use mathematics to solve work problems.																															
Communication Skills: Refers to skill at speaking, writing, drafting etc.																															
Interpretive Skills: Refers to skill in reading and understanding printed matter, tables, blueprints etc.																															
Clerical Skills: Refers to skill at keeping records, making out reports, and other types of routine paper work.																															
Personal Relations Skills: Refers to skill at dealing with people, such as customers, co-workers of other trades etc.																															
Other Skills: Add what you feel applies to your job and is not covered above. _____ _____ _____																															

APPENDIX B

QUESTIONNAIRE NUMBER TWO

NAME _____

1. Why did you decide to continue your education?

2. What field of study are you now in?

3. How does EMT training relate to your current field?

4. What do you plan to do when you graduate?

APPENDIX C

TRANSMITTAL LETTER

Dear

Please fill out the enclosed questionnaire and return it in the enclosed self-addressed and stamped envelope. The data which you give will be held in strict confidence and used for educational purposes only.

We would also like to send you additional questionnaires in the future and would appreciate your cooperation in completing them and returning them at your earliest convenience.

Sincerely yours,

/mca

Encls.

VITA

Randy Gene Snider

Candidate for the Degree of

Master of Science

Thesis: A FOLLOW-UP STUDY OF THE GRADUATES OF THE ELECTROMECHANICAL TECHNOLOGY CURRICULUM AT OKLAHOMA STATE UNIVERSITY

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Biographical:

Personal Data: Born in Cyril, Oklahoma, December 12, 1944, the son of Mr. and Mrs. Don A. Snider.

Education: Graduated from Fletcher High School, Fletcher, Oklahoma, in May, 1963; attended Cameron State Agricultural College from September, 1963 until May, 1964; received Bachelor of Science degree in Physical Sciences from Oklahoma State University in May, 1967; completed requirements for the Master of Science degree at Oklahoma State University in July, 1972.

Professional Experience: Officer in the United States Navy, 1967-1970.

Professional Organizations: United States Naval Reserves.